

SNL Decon Formulation for Mitigation and Decontamination of Chemical and Biological Warfare Agents

Overview

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Sandia National Laboratories

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Technology Need

A complete national program for protection against the chemical and biological warfare (CBW) threat must include elements for rapid response to such a threat. In the event of a domestic CBW attack, technologies to quickly decontaminate the area are necessary for two main reasons. First, the initial responders to the scene must be able to quickly decontaminate the area to a safe level so that casualties can be treated and evacuated. Second, a rapid, safe, and complete restoration of the affected facilities is necessary so that they can be readied for re-use in a timely manner without loss of critical and expensive equipment. Sandia National Laboratories (SNL) has responded to this national initiative to combat the domestic CBW threat by developing an aqueous decon formulation.

Project Description

SNL has developed a nontoxic, noncorrosive aqueous formulation—SNL Decon Formulation—for the rapid mitigation and decontamination of CBW agents. SNL Decon Formulation can be deployed as a foam, liquid spray, or fog. Potentially, the formulation can be used by first responders to the scene of a domestic CBW attack and by personnel assigned to restoration of an affected facility after an attack. Experimental results on chemical and biological (CB) simulants and live CB agents indicate that the formulation works quickly, is effective against both chemical and biological agents, and does not generate toxic byproducts (see also SNL Decon Formulation Test Results fact sheet).

Variety of Deployment Methods

The formulation can be deployed with various devices, depending on whether it is used as a foam, liquid spray, or fog. For foams, depending on the volume of use, SNL Decon Formulation has been successfully deployed by means of small handheld devices, similar to fire extinguishers, and in large-scale foam-generating devices (Figure 1). The formulation as liquid spray can be disseminated by means of commercially available paint sprayers. Commercially available cold foggers work well when deploying the formulation as fog.

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Figure 1: Large-scale foam deployment

Stability Tests

A variety of applications exists for SNL Decon Formulation, including use in civilian and military response to CBW events, demilitarization of CBW munitions, and sterilization of medical instruments, medical facilities, and food processing equipment and facilities. The formulation can be deployed to suit users' needs. For example, a formulation can be designed to satisfy specific requirements for stability (Figure 2).

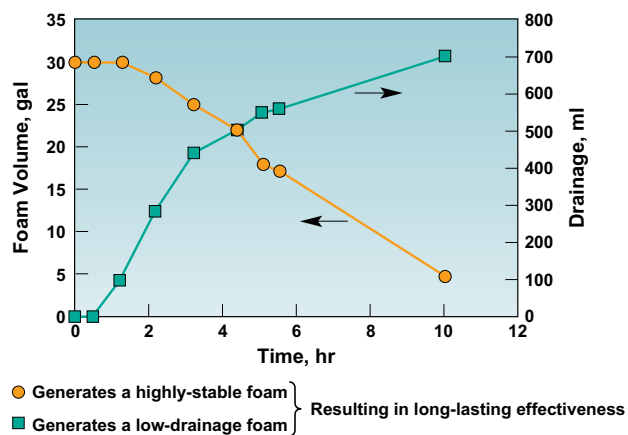


Figure 2. Stability results showing long-lasting effectiveness

Advantages

- Decontaminates and mitigates both chemical and biological weapons agents
- General disinfectant for bacterial spores, vegetative cells, and viruses
- Works quickly
- Can be deployed as foam, liquid, or fog
- Does not produce toxic byproducts
- Environmentally friendly
- Easy cleanup

Patent Pending

Sandia National Laboratories has applied for a patent for the technology. The U.S. Government retains rights to the technology for U.S. Government use. The U.S. Government has granted SNL the right to license and commercialize the technology.

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The U.S. Department of Energy under the Chemical and Biological Non-Proliferation (CBNP) Program sponsors this project.